



PATENT  
Docket No. 416272002220  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Mycong-Je CHO et al.

Serial No.: 09/552,252

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For: COMPOSITIONS AND METHODS FOR  
PLANT TRANSFORMATION AND  
REGENERATION

Examiner: G. Helmer

Group Art Unit: 1638

DECLARATION OF MYEONG-JE CHO

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

I, Mycong-Je Cho, declare as follows:

1. I am currently employed as a Vice President at Byotix, Inc. in Richmond, California and an Associate Specialist at the University of California at Berkeley.
2. I am a co-inventor of the invention disclosed in the above-referenced patent application, and am familiar with the contents thereof. I have assigned my rights in the invention to the Regents of the University of California ("the University") and stand to receive a small portion of any net royalties and fees received by the University in connection with the invention pursuant to my employment with the University.
3. I hold a Ph.D. in Agronomy from the University of Illinois at Urbana-Champaign, May 1991, and have been actively involved in Plant Physiology, Biochemistry and Molecular Biology research for over 20 years. My curriculum vitae is attached hereto as Exhibit A.

4. I am of the opinion that the term "green regenerative tissue" (also termed highly regenerative, green tissue in our several publications) as it is used in this application is clearly defined. Green regenerative tissue is a term that we came up with to describe a particular tissue type that is morphologically distinct from callus tissue as shown in Panels A and E of the attached figure. Applying the plant culturing techniques in the patent application will yield green regenerative tissue. Culturing a plant tissue like callus under the right conditions will produce sectors of green, shiny, nodular and compact tissue. This tissue is different from the surrounding tissue as is described in the patent application. One of skill in the art can grow plant tissue under the conditions in the patent application to produce the green regenerative tissue. Once produced, they would be able to readily differentiate the surrounding callus tissue from green regenerative tissue by observing the morphology (appearance) of the tissue. The tissue selected by its morphology can then readily be proliferated and regenerated into whole plants.

5. I have used the techniques described in the patent application to generate examples of normal callus and green regenerative tissue. Photographs of the tissues have been included with this declaration. Panel A shows two-month-old normal embryogenic tissue of Galena (i.e., callus tissue produced by a standard method that is similar to the protocol described by Wan and Lemaux in Plant Physiology (1994)). Panel B shows four-month-old green, highly regenerative tissue of Galena (i.e., green regenerative tissue produced by the modified culture media plus dim light methods of the present claimed invention). As the name suggests, the tissue in Panel B is a distinctly different color and appearance from the tissue in Panel A (see also Panel E). In addition, the tissue in Panel B has a different morphology. The tissue in panel B is green, shiny and nodular just as described in the patent application.

6. The green regenerative tissue of Galena was initiated DBC2 medium (Panel E) and maintained on DBC3 medium (Panel B). As described in the patent application, DBC2 medium is a culture medium containing 2.5 mg/L 2,4-D (an auxin), 0.1 mg/L 6-benzylaminopurine (BAP, a cytokinin), 5.0  $\mu$ M (50X) copper, and maltose as a carbon source; and DBC3 medium contains 1.0 mg/L 2,4 D, 0.5 mg/L BAP, 5.0  $\mu$ M copper and maltose. The plant tissue was exposed to dim light of 10-30  $\mu$ E m<sup>-2</sup> s<sup>-1</sup> for four months to initiate and proliferate the green regenerative tissue. The callus tissue in Panel A was cultured on a standard callus induction medium containing 2.5 mg/L 2,4-D, 0 mg/L BAP, 0.1  $\mu$ M (1X) copper, and maltose as a carbon source. The plant tissue was incubated in the dark for two months to

generate the callus tissue as described by Wan and Lemaux (1994). The longer the incubation period, the worse the morphology of the tissue.

7. Results of culturing and regeneration of the two tissues is shown in Panel C and D. The same medium (FHG) and light conditions ( $\sim 50 \mu\text{E m}^{-2} \text{s}^{-1}$ ) were used for regeneration of both tissues. Panel C shows plant regeneration from the callus tissue in Panel A. Panel D shows plant regeneration from the green regenerative tissue in Panel B. These panels show that the green regenerative tissue is highly regenerative, especially when compared to the callus tissue produced by standard methods. Panel C shows no regeneration of green plants while Panel D shows a significant degree of regenerated green plants sprouting from the green regenerative tissue. Galena is a commercial cultivar for malting, but is very recalcitrant in tissue culturing using standard methods. However, the results in Panel D are typical of the results obtained with Galena using the methods of the present invention.

8. The green regenerative tissues generated by the protocol described in the patent application could be used directly as transformation targets. In addition, when this green regenerative tissue protocol was used as an intermediate step between callus induction and regeneration, remarkable improvement in regenerability was observed as described in the patent application.

9. I have read and understand the subject matter disclosed in Wan, Y. and Lemaux, P.G., Plant Physiology (1994) 104:37-48 ("Wan and Lemaux").

10. Wan and Lemaux disclose on page 38, under "Plant Materials", growing barley plants of a winter cultivar, Igri, of 10 cm in height under light of  $10\text{-}15 \mu\text{E}$  at  $4^\circ \text{C}$  for 8 weeks. As I understand this section, it refers to cultivating whole plants and not plant tissues or seeds. The cultivation is intended to vernalize the plants. Vernalization is the process of exposing a plant in the vegetative state of growth to lowered temperatures and light conditions to induce or accelerate flowering in the plant. The low temperature ( $4^\circ \text{C}$ ) is certainly not optimal for tissue culture. A room temperature range of between  $24^\circ \text{C}$  and  $27^\circ \text{C}$  is optimal for tissue culture for most plant species including barley. Thus, the vernalization conditions for whole plants described in Wan and Lemaux would not be useful for tissue culture, nor would they provide any insight into optimal tissue culture conditions.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

January 21, 2004

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### EDUCATION/TRAINING/EXPERIENCE

Seoul National University S. Korea	B.S., <i>cum laude</i>	1977-1984	Agronomy
Korean Army S. Korea		1981-1983	
Seoul National University S. Korea	M.S.	1984-1986	Agronomy
University of Illinois Urbana, IL	Ph.D.	1987-1991	Agronomy (Soybean Physiology and Biochemistry)
University of Illinois Urbana, IL	Postdoctor	1991-1994	Soybean Molecular Biology
University of California Berkeley, CA	Postdoctor	1994-1997	Cereal Transformation & Gene Expression
University of California Berkeley, CA	Assistant Researcher	1998- 1999	Cereal Transformation & Gene Expression
Ventria Bioscience Sacramento, CA	Consultant	May 1999- Nov. 1999	Research Consultation
Scigen Harvest Seoul, S. Korea	Consultant	Dec. 1999- Nov. 2000	Research Consultation
Exelixis, Inc. San Francisco, CA	Consultant	Oct. 2000- Sep. 2001	Research Consultation
Rural Development Administration S. Korea	Honorary Scientist	Oct. 1998-	Research Consultation
Genomine, Inc. S. Korea	Scientific Advisor	Jun. 2002-	
University of California Berkeley, CA	Associate Specialist	1999-	Crop Transformation & Gene Expression
Byotix, Inc. Richmond, CA	Vice President	Oct. 2001-	Plant Biotechnology & Genomics

### PUBLICATION

- Cho M-J, Yano H, Okamoto D, Kim H-K, Jung H-R, Newcomb K, Le VK, Yoo HS, Langham R, Buchanan BB, Lemaux PG (2004) Stable transformation of rice (*Oryza sativa* L.) via microprojectile bombardment of highly regenerative, green tissues derived from mature seed. *Plant Cell Rep* (in press)
- Cho M-J, Le VK, Okamoto D, Kim Y-B, Choi HW, Lemaux PG (2004) Generation of transgenic plants of creeping bentgrass (*Agrostis palustris* Huds.) plants from mature seed-derived highly regenerative tissues. Mujib A, Cho M-J, Predieri S, Banerjee S (eds) *In Vitro Applications in Crop Improvement-Recent*

- Progress. IBH - Oxford, India (in press)
- Kim Y-B, Garbisu C, Pickering IJ, Prince RC, George GN, **Cho M-J**, Wong JH, Buchanan BB (2003) Thioredoxin *h* overexpressed in barley seeds enhances selenite resistance and uptake during germination and early seedling development. *Planta* 218: 186-191
- Choi HW, Lemaux PG, **Cho M-J** (2003) Long-term stability of transgene expression driven by barley endosperm-specific hordein promoters in transgenic barley. *Plant Cell Rep* 21: 1108-1120
- Cho M-J**, Choi HW, Okamoto D, Zhang S, Lemaux PG (2003) Expression of green fluorescent protein and its inheritance in transgenic oat plants generated from shoot meristematic cultures. *Plant Cell Rep* 21: 467-474
- Choi HW, Lemaux PG, **Cho M-J** (2002) Use of fluorescence in situ hybridization technique for mapping of transgenes and screening of homozygous lines in transgenic barley plants. *Theor Appl Genet* 106: 92-100
- Cho M-J**, Lemaux PG (2002) Current status and perspectives on developing GM crops: Selective marker-free technology and other customer-friendly scientific approaches. 2002 International Symposium on the Safety Assessment and Regulation for the Genetically Modified Foods. KFDA & KSFTS, pp 101-109
- Wong JH, Kim YB, Ren P-H, Cai N, **Cho M-J**, Hedden P, Lemaux PG, Buchanan BB (2002) Transgenic barley grain overexpressing thioredoxin shows evidence that the starchy endosperm communicates with the embryo and the aleurone. *Proc Natl Acad Sci USA* 99: 16325-16330
- Cho M-J**, Choi HW, Bregitzer P, Zhang S, Lemaux PG (2002) Transgenic barley (*Hordeum vulgare* L.) and chromosomal variation. Jackson, JF, Linskens, HF, Inman, RB (eds) Testing for Genetic Manipulation in Plants. Molecular Methods of Plant Analysis. Springer Verlag, vol 22: 169-188
- Wong JH, Yano H, Lee YM, **Cho M-J**, Buchanan BB (2002) The identification of thioredoxin-linked proteins by fluorescent labeling combined with IEF/SDS-PAGE. *Methods Enzymol* 347: 339-349
- Godwin I, Zhang S, Cho M-J, Bregitzer P, Lemaux PG. (2002) Retrotransposons and cereal genome instability: barley and the rampant BARE-1 element. McComb JA (Ed.) "Plant Breeding for the 11<sup>th</sup> Millenium" Proc of the 12th Australasian Plant Breeding Conference Perth, Australia 15-20 September, 2002. pp 37-41
- Bregitzer P, Zhang S, **Cho M-J**, Lemaux PG, (2002) Reduced somaclonal variation in barley is associated with culturing highly differentiated, meristematic tissues. *Crop Sci* 42: 1303-1308
- Cho M-J**, Choi HW, Jiang W, Ha CD, Lemaux PG (2002) Endosperm-specific expression of green fluorescent protein driven by the hordein promoter is stably inherited in transgenic barley (*Hordeum vulgare* L.) plants. *Physiol Plant* 115: 144-154
- Yano H, Wong JH, **Cho M-J**, Buchanan BB (2001) Redox changes accompanying the degradation of seed storage proteins in germinating rice. *Plant Cell Physiol* 42: 879-883
- Choi HW, Lemaux PG, **Cho M-J** (2001) Selection and osmotic treatment exacerbate chromosomal aberration in callus cultures and plants of barley (*Hordeum vulgare* L.). *J Plant Physiol* 158: 935-943
- Cho M-J**, Choi HW, Lemaux PG (2001) Transformed *T<sub>0</sub>* orchardgrass (*Dactylis glomerata* L.) plants produced from highly regenerative tissues derived from mature seeds. *Plant Cell Rep* 20: 318-324
- Ha CD, Lemaux PG, **Cho M-J** (2001) Stable transformation of a recalcitrant Kentucky bluegrass (*Poa pratensis* L.) cultivar using highly regenerative tissues. *In Vitro Cell Dev Biol* 37: 6-11
- Yano H, Wong JH, Lee YM, **Cho M-J**, Buchanan BB (2001) A new strategy for the identification of proteins targeted by thioredoxin. *Proc Natl Acad Sci USA* 98: 4794-4799
- Cho M-J**, Ha CD, Lemaux PG (2000) Production of transgenic tall fescue and red fescue plants by particle bombardment of mature seed-derived highly regenerative tissues. *Plant Cell Rep* 19: 1084-1089
- Cho M-J**, Lemaux PG. (2000) Issues with new GM foods: biotechnology and agriculture. *Biotechnology and Seed War in the 21<sup>st</sup> Century*. Seoul, Korea pp 65-75
- Bregitzer P, Campbell RD, Dahleen LS, Lemaux PG, **Cho M-J** (2000) Development of transformation systems for elite barley cultivars. *Barley Genetics Newsletter* 30: 10-12
- Choi HW, Lemaux PG, **Cho M-J** (2000) High frequency of cytogenetic aberration in transgenic oat (*Avena sativa* L.) plants. *Plant Sci* 156: 85-94
- Choi HW, Lemaux PG, **Cho M-J** (2000) Increased chromosomal variation in transgenic versus nontransgenic barley (*Hordeum vulgare* L.) plants. *Crop Sci* 40: 524-533
- Cho M-J**, Buchanan BB, Lemaux PG (1999) Development of transformation systems for monocotyledonous crop species and production of foreign proteins in transgenic barley and wheat seeds. In: Application of Transformation Technology in Plant Breeding. Special Seminar for 30th Anniversary Korean Breeding Soc., Suwon, Korea, November 19, 1999, pp 39-53
- Cho M-J**, Choi HW, Lemaux PG (1999) Stable inheritance of seed-specific expression of transgenes and increased cytological variation in transgenic plants. In Application of Transformation Technology in Plant Breeding. Special Seminar for 30th Anniversary Korean Breeding Soc., Suwon, Korea,

November 19, 1999, pp 55-63

- Cho M-J**, Wong J, Marx C, Jiang W, Lemaux PG, Buchanan BB (1999) Overexpression of thioredoxin *h* leads to enhanced activity of starch debranching enzyme (pullulanase) in germinating barley seeds. *Proc Natl Acad Sci USA* 96: 14641-14646
- Koprek T, **Cho M-J**, Choi HW, Kim HK, Zhang S, Bregitzer P, Lemaux PG (1999) Clearing the hurdles of small grain transformation: A molecular and cytological approach. *Proc 9th Australian Barley Technical Symposium*, Melbourne, Victoria, Australia, 12-16 Sep., 1999. pp 2.3.1-2.3.8
- Cho M-J**, Jiang W, Lemaux PG (1999) High-frequency transformation of oat via microprojectile bombardment of seed-derived highly regenerative cultures. *Plant Sci* 148: 9-17
- Zhang S, **Cho M-J**, Koprek T, Bregitzer P, Yun R, Lemaux PG (1999) Genetic transformation of commercial cultivars of oat (*Avena sativa* L.) and barley (*Hordeum vulgare* L.) using *in vitro* shoot meristematic cultures derived from germinated seedlings. *Plant Cell Rep* 18: 959-966
- Maughan PJ, Philip R, **Cho M-J**, Widholm JM, Vodkin LO (1999) Biolistic transformation, expression, and inheritance of bovine  $\beta$ -casein in soybean (*Glycine max*). *In Vitro Cell Dev Biol* 35: 344-349
- Zhang S, Zhang S, **Cho M-J**, Bregitzer P, Lemaux PG (1999) Comparative analysis of genomic DNA methylation status and field performance of plants derived from embryogenic calli and shoot meristematic cultures. In *Plant Biotechnology and In Vitro Biology in the 21st Century*. Altman A., Ziv M., Izhar S. (eds.) Kluwer Academic Pub. p 263-267
- Cho M-J**, Choi HW, Buchanan BB, Lemaux PG (1999) Inheritance of tissue-specific expression of barley hordein promoter-*uidA* fusions in transgenic barley plants. *Theor Appl Genet* 98: 1253-1262
- Lemaux PG, **Cho M-J**, Zhang S, Bregitzer P (1999) Transgenic Cereals: *Hordeum vulgare* (barley). In *Molecular Improvement of Cereal Crops*. Vasil I.K. (ed.). Kluwer Academic Pub. p 255-316
- Cho M-J**, Jiang W, Lemaux PG (1998) Transformation of recalcitrant barley cultivars through improvement of regenerability and decreased albinism. *Plant Sci* 138: 229-244
- Philip R, Darnowski DW, Sundararaman V, **Cho M-J**, Vodkin LO (1998) Localization of  $\beta$ -glucuronidase in protein bodies of transgenic tobacco seed by an amino terminal sequence of the soybean lectin gene. *Plant Sci* 137: 191-204
- Jiang W, **Cho M-J**, Lemaux PG (1998) Improved callus quality and prolonged regenerability in model and recalcitrant barley (*Hordeum vulgare* L.) cultivars. *Plant Biotechnology* 15 (2): 63-69
- Lemaux PG, **Cho M-J**, Koprek T, Zhang S, Peter GF (1997) Information learned from the genetic engineering of recalcitrant monocot species: applicability to problems in forest biotechnology. *TAPPI Proc Biol Sci Sym* 289-293
- Cho M-J**, Lemaux PG (1997) Rapid PCR amplification of chimeric products and its direct application to *in vivo* testing of recombinant DNA construction strategies. *Molecular Biotechnology* 8: 13-16
- Lemaux PG, Zhang S, Zhang S, **Cho M-J**, Jiang W, Koprek T, Williams-Carrier R, McElroy D Louwerse J (1997) Progress and continuing challenges in the genetic engineering of barley for commercial improvement. *Proc 31st Barley Improvement Conference* 60-61
- Cho M-J**, Vodkin LO, Widholm JM (1997) Transformation of soybean embryogenic cultures by microprojectile bombardment. *Plant Biotechnology* 14:11-16
- Lemaux PG, **Cho M-J**, Louwerse J, Williams R, Wan Y (1996) Bombardment-mediated transformation methods for barley. *Bio-Rad US/EG Bulletin* 2007 p1-6
- Cho M-J**, Widholm JM, Vodkin LO (1995) Cassettes for seed-specific expression tested in transformed embryogenic cultures of soybean. *Plant Molecular Biology Rep* 13(3): 255-269
- Cho M-J**, Harper JE (1993) Effect of abscisic acid application on root isoflavonoid concentration and nodulation of wild-type and nodulation-mutant soybean plants. *Plant and Soil* 153: 145-149
- Cho M-J**, Harper JE (1991) Root isoflavonoid response to grafting between wild-type and nodulation-mutant soybean plants. *Plant Physiology* 96: 1277-1282
- Cho M-J**, Harper JE (1991) Effect of localized nitrate application on isoflavonoid concentration and nodulation in split-root systems of wild-type and nodulation-mutant soybean plants. *Plant Physiology* 95: 1106-1112
- Cho M-J**, Harper JE (1991) Effect of inoculation and nitrogen on isoflavonoid concentration in wild-type and nodulation-mutant soybean roots. *Plant Physiology* 95: 435-442
- Cho M-J**, Harper JE (1990) Effect of various nitrogen sources on isoflavonoid concentration in wild-type and nodulation-mutant soybean roots. Gresshoff, P.M. et al. (ed.) *Nitrogen fixation: Achievements and objectives*. Chapman and Hall: New York, London, p 255
- Cho M-J**, Lee H-J (1986) The competition relations of four forage species in diallel combination mixture. *Korean J Crop Sci* 31: 426-433

- Lee H-J, Cho M-J, Lee H-S (1985) Effect of canopy reforming on light penetration into crop community and yielding in corn. Korean J Crop Sci 30: 76-83
- Lee H-J, Cho M-J (1985) Root competition and productivity in mono- and binary association of four forage species. Proc of the XV Internatl Grassland Cong pp 663-665

## PATENT APPLICATIONS

- Lemaux PG, Buchanan BB, Cho M-J, Kim H-K. Cloning and characterization of glucose-6-phosphate dehydrogenase gene from barley.\*\*\*
- Wong J, Cho M-J, Lemaux PG, Buchanan BB. Change in redox status and abundance of alpha-amylase inhibitor proteins in transgenic wheat overexpressing thioredoxin *h*.\*\*\*
- Cho M-J, Wong J, Lemaux PG, Buchanan BB. Transgenic wheat grains overexpressing wheat thioredoxin *h*.\*\*\*
- Wong J, Cho M-J, Buchanan BB, Lemaux PG. Value-added traits in barley grain transformed with thioredoxin *h*.\*\*\*
- Cho M-J, Wong J, Marx C, Buchanan BB, Lemaux PG. Enhanced expression of thioredoxin in plant seeds.\*\*\*
- Lemaux PG, Cho M-J. Novel methods for the transformation of multiple genotypes of wheat, oat, maize, rice and turf/forage grasses.\*
- Cho M-J, Lemaux PG, Buchanan BB. Production of heterologous proteins in maturing monocot seeds (US patent issued)
- Zhang S, Cho M-J, Bregitzer P, Lemaux PG. Methods and compositions for transformation of cereals using cultured meristematic tissue (US patent issued)
- Cho M-J, Lemaux PG, Buchanan BB. Cloning and characterization of NADP-thioredoxin reductase gene from barley (US patent issued)\*\*.
- Calliu M, Del Val G, Cho M-J, Lemaux PG, Buchanan BB. Barley gene for thioredoxin (US patent issued)\*\*.
- Lemaux PG, Cho M-J. Novel methods for the transformation of multiple genotypes of barley (US patent issued)\*.

\* combined for PCT filing.

\*\* combined for US patent and PCT filing.

\*\*\* combined for PCT filing.

## MANUSCRIPTS IN PREPARATION

- Cho M-J, Jung HR, Calliu M, Del Val G, Lemaux PG, Buchanan BB. Isolation and characterization of barley genes for thioredoxin *h* and NADP-thioredoxin reductase.
- Cho M-J, Lemaux PG. New targets for wheat (*Triticum aestivum* L) transformation to reduce genotype limitation.
- Buchanan BB, Jung H-R, Wong J-H, Kim H-K, Cho M-J, Lemaux PG. Hypoallergenic wheat produced by overexpressing thioredoxin *h*.
- Cho M-J, Kim Y-B, Choi HW, Yoo HS, Hwang KH, Buchanan BB, Lemaux PG. Production of barley thioredoxin *h* and NADP-thioredoxin reductase in transgenic barley.
- Cho M-J, Choi HW, Ha CD, Park J, Buchanan BB, Lemaux PG. Subcellular targeting of barley D-hordein promoter-*gfp* fusions in transgenic barley plants.
- Cho M-J, Ha CD, Okamoto D, Buchanan BB, Lemaux PG. Subcellular localization of  $\beta$ -glucuronidase in protein bodies of transgenic barley seed by an amino terminal sequence of the barley B1-hordein gene.
- Cho M-J, Lemaux PG (2001) An efficient system for transformation and plant regeneration of sorghum and maize using highly regenerative, green tissues.
- Choi HW, Lemaux PG, Cho M-J. Chromosomal variation in transgenic plants.
- Cho M-J, Lemaux PG. Rapid isolation of a cDNA clone by PCR.

## ONGOING RESEARCH PROJECTS

- Cho M-J, Okamoto D, Kim Y-B, Yoo H-S, Lemaux PG, Buchanan BB. Improvement of baking quality by application of thioredoxin system.
- Cho M-J, Yano H, Lemaux PG, Buchanan BB. Improvement of grain quality in transgenic rice



plants.

Yoo HS, Lemaux PG, Cho M-J. Application of *Ac/Ds* system for excision of selectable marker gene in transgenic wheat.

Cho M-J, Buchanan BB, Lemaux PG. Strategy for enhancing expression of thioredoxin *h* in transgenic barley grains.

Yu X-H, Bregitzer P, Cho M-J, Chung ML, Lemaux PG. Transposon-mediated generation of marker-free barley plants expressing putative antifungal proteins.

## ABSTRACTS

Yu X-H, Bregitzer P, Cho M-J, Chung ML, Yu HS, Lemaux PG (2003) *Ac/Ds* Transposon-mediated generation of marker-free barley plants expressing scab resistance proteins. 2003 ASPB Meeting. Honolulu, Hawaii

Cho M-J, Jung H-R, Kim H-K, Caillau M, del Val G, Lemaux PG, Buchanan BB (2003) Gene isolation and characterization of thioredoxin *h* and NADP-thioredoxin reductase from barley (*Hordeum vulgare* L.). 2003 ASPB Meeting. Honolulu, Hawaii

Kim H-K, Cho M-J, Jung HR, Y-B Kim, Morigasaki S, Wong JH, Lemaux PG, Buchanan BB (2003) Alleviation of wheat allergenicity using thioredoxin system. 2003 Congress on In Vitro Biology, Portland, OR

Godwin I, Byrne E, Zhang S, Cho M-J, Lemaux PG (2003) Retrotransposons and cereal genome instability: BARE-1 activation in the genetic transformation of barley. XIX International Congress of Genetics, Melbourne, Australia, July 6-11, 2003.

Kim H-K, Cho M-J, Jung HR, Y-B Kim, Morigasaki S, Wong JH, Lemaux PG, Buchanan BB (2002) Lowering the allergenicity of wheat. 2002 Wheat Industry Forum, Albuquerque, NM

Yu X-H, Bregitzer P, Cho M-J, Chung ML, Lemaux PG (2002) Transposon-mediated generation of marker-free barley plants expressing putative antifungal proteins. 2002 National Fusarium Head Blight Forum Proceedings. Erlanger, KY, Dec. 7-9, 2002

Cho M-J, Buchanan BB, Lemaux PG (2001) Use of barley endosperm-specific hordein promoters for production of recombinant proteins in transgenic cereal seeds. 2001 Congress on In Vitro Biology

Cho M-J, Lemaux PG (2001) An efficient system for transformation and plant regeneration of sorghum (*Sorghum bicolor* L.) using highly regenerative, green tissues. 2001 Congress on In Vitro Biology

Cho M-J, Yano H, Okamoto D, Le VK, Newcomb KL, Buchanan BB, Lemaux PG (2001) High-frequency transformation of rice (*Oryza sativa* L.) via microprojectile bombardment of mature seed-derived highly regenerative tissues. 2001 Congress on In Vitro Biology

Choi HW, Lemaux PG, Cho M-J (2001) Long-term stability of transgene expression driven by barley endosperm-specific hordein promoters in transgenic barley (*Hordeum vulgare* L.) plants. 2001 Congress on In Vitro Biology

Choi HW, Lemaux PG, Cho M-J (2001) Transformation process exacerbates cytological variation in transgenic grass and cereal plants. 2001 Congress on In Vitro Biology

Yu X-H, Bregitzer P, Cho M-J, Lemaux PG (2001) *Ac-Ds* System to obtain marker-free transgenic barley plants that stably express putative antifungal proteins. 2001 National Fusarium Head Blight Forum Proceedings. Erlanger, KY, Dec. 8-10, 2001

Wong JH, Ren P-H, Cai N, Kim H-K, Cho M-J, Lemaux PG, Buchanan BB (2001) Thioredoxin-linked proteins in transgenic cereals over-expressing thioredoxin. 2001 Annual Meeting of the American Society of Plant Physiologists

Cho M-J (2000) Development of transformation systems for monocotyledonous crop species using highly regenerative tissues. 2000 Congress on In Vitro Biology

Cho M-J, Kim H-K, Choi HW, Buchanan BB, Lemaux PG (2000) Endosperm-specific expression driven by barley D-hordein promoter and its inheritance in transgenic barley and wheat plants. 2000 Congress on In Vitro Biology

Cho M-J, Le VK, Okamoto D, Lemaux PG (2000) Generation of transgenic plants of creeping bentgrass (*Agrostis palustris* Huds.) plants from mature seed-derived highly regenerative tissues. 2000 Congress on In Vitro Biology

Choi HW, Lemaux PG, Cho M-J (2000) Use of fluorescence in situ hybridization technique for mapping of transgenes and screening of homozygous lines in transgenic barley plants. 2000 Congress on In Vitro Biology

Choi HW, Lemaux PG, Cho M-J (2000) Factors affecting increased chromosomal aberrations in callus cultures and plants of barley (*Hordeum vulgare* L.) during transformation process. 2000 Congress on In

# Vitro Biology

- Ha CD, Lemaux PG, **Cho M-J** (2000) Transgenic plants of Kentucky bluegrass (*Poa pratensis* L.) generated from highly regenerative tissues. 2000 Congress on In Vitro Biology
- Yano H, Wong JH, **Cho M-J**, Buchanan BB (2000) Characterization of glutelin mobilization by non-reducing/reducing two-dimensional SDS-PAGE following monobromobimane (mBBBr) labeling. 2000 Annual Meeting of the American Society of Plant Physiologists
- Wong JH, Ren P-H, Cai N, **Cho M-J**, Buchanan BB (2000) Transgenic barley grain over-expressing wheat thioredoxin *h* shows improved germination properties. 2000 Annual Meeting of the American Society of Plant Physiologists
- Yano H, Wong JH, **Cho M-J**, Buchanan BB (2000) Determination of specificity of thioredoxin in reducing disulfide bonds of target proteins. 2000 Annual Meeting of the American Chemical Society
- Lemaux PG, **Cho M-J**, Zhang S, Bregitzer P (1999) Transgenic small grain cereals: from laboratory to marketplace. 1999 Congress on In Vitro Biology
- Cho M-J**, Lemaux PG (1999) Transgenic orchardgrass (*Dactylis glomerata* L.) plants produced from highly regenerative tissues. 1999 Congress on In Vitro Biology
- Cho M-J**, Ha CD, Buchanan BB, Lemaux PG (1999) Production of transgenic tall fescue and red fescue plants by particle bombardment of highly regenerative tissues. 1999 Congress on In Vitro Biology
- Cho M-J**, Choi HW, Jiang W, Ha CD, Lemaux PG (1999) Expression and inheritance of green fluorescent protein (*gfp*) in transgenic barley plants. 1999 Congress on In Vitro Biology
- Kim H-K, Lemaux PG, Buchanan BB, **Cho M-J** (1999) Reduction of genotype limitation in wheat (*Triticum aestivum* L.) transformation. 1999 Congress on In Vitro Biology
- Choi HW, Lemaux PG, **Cho M-J** (1999) High frequency of cytogenetic aberration in transgenic oat (*Avena sativa* L.) plants. 1999 Congress on In Vitro Biology
- Lemaux PG, **Cho M-J**, Zhang S, Bregitzer P (1999) The development and utilization of transformation systems for the improvement of barley and wheat. The 9th Australian Barley Technical Symposium and 49th Royal Australian Chemical Institute Cereal Chemistry Division Conference
- Maughan PJ, Philip R, **Cho M-J**, Widholm JM, Vodkin LO (1998) Biolistic transformation, expression and inheritance of bovine  $\beta$ -casein in soybean. 1998 Congress on In Vitro Biology
- Cho M-J**, Jiang W, Lemaux PG (1998) Transformation of recalcitrant barley cultivars: improvement of regenerability and decreased albinism. 1998 Congress on In Vitro Biology
- Cho M-J**, Ha CD, Buchanan BB, Lemaux PG (1998) Subcellular targeting of barley hordein promoter-*uidA* fusions in transgenic barley seed. 1998 Congress on In Vitro Biology
- Cho M-J**, Zhang S, Lemaux PG (1998) Transformation of shoot meristem tissues of oat using three different selectable markers. 1998 Congress on In Vitro Biology
- Cho M-J**, Jiang W, Lemaux PG (1998) High-frequency transformation of oat via microprojectile bombardment of embryogenic callus-derived highly regenerative cultures. 1998 Congress on In Vitro Biology
- Choi HW, **Cho M-J**, Lemaux PG (1998) Analysis of cytological stability and phenotypic variation in transgenic barley (*Hordeum vulgare* L.) plants. 1998 Congress on In Vitro Biology
- Lemaux PG, Zhang S, **Cho M-J**, Bregitzer P (1998) Transgenic Cereals: Impact of the *in vitro* culture transformation process on plant quality. 18th International Congress of Genetics. Beijing, China
- Cho M-J**, Buchanan BB, Lemaux PG (1996) Expression of barley hordein promoter-*uidA* fusions in transgenic barley plants. 1996 World Congress on In Vitro Biology
- Jiang W, **Cho M-J**, Lemaux PG (1996) Improvement of callus quality and regenerability in two barley (*Hordeum vulgare* L.) genotypes. 1996 World Congress on In Vitro Biology
- Philip R, Sundararaman V, **Cho M-J**, Vodkin LO (1996) Subcellular localization of soybean lectin-GUS fusions in transgenic tobacco seeds. 1996 World Congress on In Vitro Biology
- Lemaux PG, Wan Y, **Cho M-J**, Bregitzer P, Williams R, Lie Y, Halbert S, Hake S, Buchanan BB (1995) Molecular breeding of barley: Challenges and opportunities. Value-Added Cereals through Biotechnology
- Lemaux PG, Wan Y, Bregitzer P, Halbert S, Wyatt S, **Cho M-J**, Marx EC, Buchanan BB (1995) Molecular breeding of barley - A beginning. International Plant Genome III Conference
- Sundararaman VP, **Cho M-J**, Vodkin LO (1994) Understanding organ-specific gene expression in soybean. 5th Biennial Conference on Molecular and Cellular Biology of the Soybean
- Cho M-J**, Widholm JM, Vodkin LO (1994) Expression of a soybean seed-specific lectin promoter in transgenic soybean embryos. 1994 Annual Meeting of the American Society of Plant Physiologists

Cho M-J, Vodkin LO, Widholm JM (1993) Genetic transformation of soybean by microprojectile bombardment. 85th Annual Meeting of the American Society of Agronomy

Cho M-J, Harper JE (1990) Effect of various N sources on isoflavonoid concentration in wild-type and nodulation-mutant soybean roots. 8th Internatl Cong on N Fixation Abstract, Knoxville, TN

## RESEARCH GRANTS

Development of a Gene Expression System in Soybean. PI, Myeong-Je Cho  
(November 2002-October 2005) \$700,000

Genetic Engineering of Waterlogging-resistant Barley Plants. PI, Peggy G. Lemaux & Myeong-Je Cho  
(Submitted)

## ACADEMIC HONORS

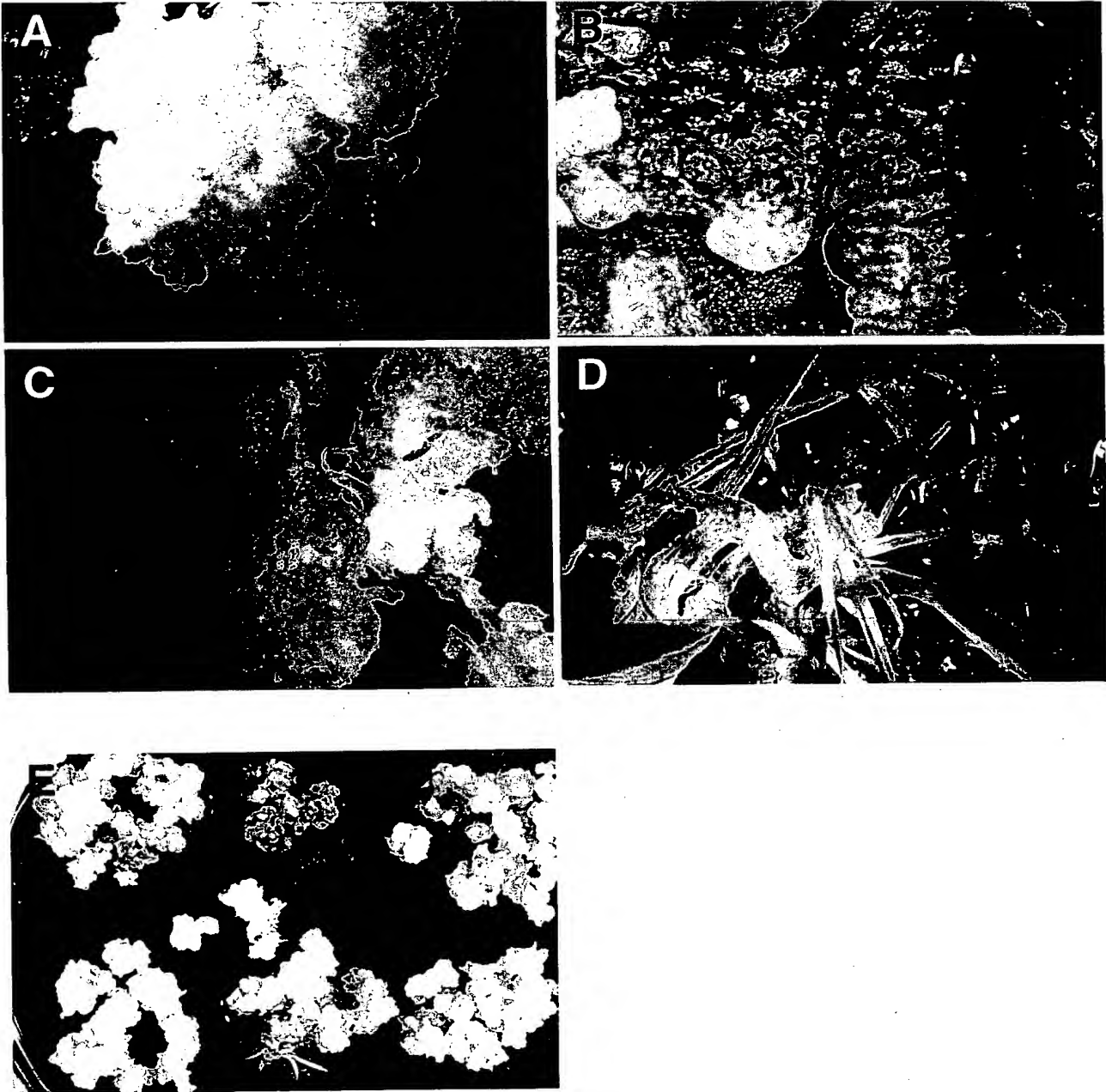
Graduation *cum laude* (February 1984)

Korean Government Scholarship (December 1986 - December 1989)

## MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

American Society of Plant Physiologists

**Figure for Myeong-Je Declaration**



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